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UCSB Donates Patent Rights for Novel Use of Heart Drugs to Combat Global Parasitic Disease

By EILEEN CONRAD

UCSB announced last month that it has donated all rights to a patent that covers the novel use of an established class of cardiovascular medicines as a potential new drug against a global parasitic disease. The Institute for OneWorld Health, a nonprofit pharmaceutical company based in San Francisco, will use the discovery and the data associated with the medicines to accelerate drug development for treatment of schistosomiasis.

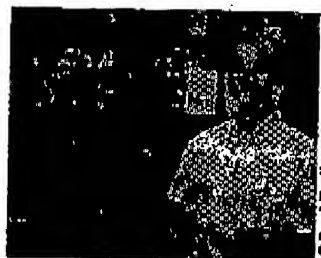
Two UCSB researchers discovered that calcium channel blockers may provide an inexpensive alternative to controlling schistosome infection, a serious global health problem that afflicts more than 200 million people annually in developing nations. An estimated 200,000 people, many of them older children, die every year from chronic damage to vital organs caused by parasitic worms and their eggs.

The inventors are Mark Walter, a research biologist, and Armand Kuris, professor of biology.

Walter decided to approach schistosomiasis by attacking the ability of the female worm to produce eggs. Those eggs that are not excreted become trapped in the tissues of the liver, spleen, intestine, and bladder, where they become calcified. Over time the accumulation of thousands of eggs causes irreversible damage to these organs.

By investigating the physiology of schistosome egg production, Walter and Kuris found that these parasites may need calcium to reproduce. They discovered that calcium channel blockers suppressed the production of eggs when tested in vitro.

"Calcium channel blockers look very promising for the treatment of schistosomiasis," said Kuris, an expert in parasitology and associate provost of the College of Creative Studies. Physicians routinely prescribe calcium channel blockers to treat high blood pressure, correct abnormal heart



UCSB research biologist Mark Walter, left, and Armand Kuris, professor of zoology, have found a way to control in vitro the parasite that causes schistosomiasis.

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rhythms, treat panic attacks and bipolar disorder, and prevent migraine headaches.

"We know that the drugs are safe for people," said Kuris. "They are available, and not terribly expensive. We are gratified by OneWorld Health's interest in our discovery, and confident in its ability to develop this inexpensive treatment for schistosomiasis for children in rural villages throughout the world."

OneWorld Health partners with pharmaceutical and biotechnology companies, universities, governments, and others to develop compounds that exhibit promise in treating developing world diseases. Its strategy is to secure intellectual property rights to innovations that might not otherwise be developed.

"The generous donation of this UCSB patent is a sterling model for other academic and biopharmaceutical organizations seeking to contribute to global health," said Victoria G. Hale, CEO of OneWorld Health. "We are excited at the prospect of creating a new use for these drugs. Their well-documented safety and effectiveness could reduce the number of years it might take to bring a new treatment to people with schistosomiasis."

A number of existing drugs kill the adult worms, but side effects can occur and none of the treatments provides lasting immunity. Reinfection after anti-schistosomal drug treatment is fairly common because people return to infected water sources. Repeated treatment of people has also resulted in drug-resistant strains of schistosomes. Moreover, the cost of drug treatment is beyond the reach of many developing countries in Asia, Africa, and Latin America.

The researchers explained that if schistosome egg production in humans could be suppressed by this type of treatment, then both the pathology of the disease and the continuation of the parasite lifecycle could be halted. The presence of the nonreproductive worms may also help infected people keep their immunity to reinfection.